Correction osteotomy for malunion of the talar head: a case report

T Matsumura, H Sekiya, Y Hoshino
Orthopaedic Department, Jichi Medical University, Japan

ABSTRACT

Talar head fractures are rare injuries. We present a 26-year-old man with malunion of the talar head. The displaced fracture was initially neglected. The patient was treated with osteotomy and bone grafting to improve the congruity and movement of the talonavicular joint. Three months after surgery, he returned to his pre-injury activity level with no disability.

Key words: fractures, bone; osteotomy; talus

INTRODUCTION

Talar fractures are uncommon, accounting for only 0.1 to 0.85% of all fractures, and talar head fractures represent only 5 to 10% of all talar fractures. They are difficult to recognise on plain radiographs. Computed tomography is useful for diagnosing such fractures and clarifying the anatomy. We report a case where osteotomy was used to correct malunion of the talar head.

CASE REPORT

In July 2002, a 26-year-old man fractured his right talar head in a wakeboard accident when jumping into the sea; the fracture was neglected and treated with casting for 4 weeks. Four months later, he still had pain in the dorsum of his right foot and a pronounced limp. Five months after the injury, he presented with severe tenderness on the lateral side of the talonavicular joint, aggravated by both inversion and eversion of the forefoot. He had a normal range of movement in both his ankle and foot. There was no tenderness over the talocrural and talocalcaneal joints. Plain radiography and computed tomography demonstrated a malunion of the medial talar head, a widening of the talonavicular joint, and an impacted fracture of the navicular and talus (Fig. 1). There was no sign of a talocalcaneal joint injury.

The malunion of the talar head was treated surgically using a medial approach to improve access...
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Figure 1  (a) Anteroposterior radiograph and (b) computed tomographic scan of the right foot demonstrate the malunited talar head and incongruity of the talonavicular joint. The arrow indicates the osteotomy line.

Figure 3  At 18 months follow-up, the (a) radiograph and (b) computed tomographic scan show good congruity of the talonavicular joint.

to the talonavicular joint. The joint was filled with granulation tissue, but the cartilage was intact. The medial head of the talus was medially displaced and malunited. The malunion was osteotomised using an oscillating saw. To determine the optimal position of the talar head, the osteotomy gap was opened with a laminar spreader. An image intensifier confirmed good congruity of the talonavicular joint. An autogenous tricortical iliac crest bone graft was used to fill the osteotomy gap. A 4-mm cancellous screw was inserted from the medial talar head without crossing the bone graft. The defect in the lateral navicular was filled with cancellous bone (Fig. 2).

The patient was given a below-knee cast with non-weight-bearing walking for 3 weeks. Range-of-movement exercises of the ankle, subtalar and midtarsal joints were then initiated, with partial weight bearing on crutches for an additional 5 weeks.

At the 3-month follow-up, the patient had returned to wakeboard competition without pain. At 18 months, the screw was removed, and the talonavicular joint was shown to be congruous (Fig. 3). The patient was satisfied with the results and the ankle and midtarsal joints had an unrestricted range of movement.

DISCUSSION

Talar head fractures are rare injuries, accounting for 3 to 5% of all talar injuries, or 10% of all talar fracture-dislocations. Because of its rarity, this fracture is sometimes neglected. Visualisation of this fracture requires maximum equinus position, 15° pronation of the foot, and the radiographic tube directed cephalically 75° from the table top. Computed tomography is very useful for diagnosing this fracture and clarifying the anatomy.
The mechanism of injury is a compressive force acting on the long axis of the foot on a fully planter-flexed foot. In our patient, the radiographic findings suggested that a massive compressive force was imparted to the lateral talonavicular joint through the forefoot when he jumped into the sea.

There are no comparative clinical studies on the treatment and outcomes of talar head fractures. Non-displaced fractures can be treated with short-leg casting and non-weight bearing for 6 to 12 weeks. A small fragment may be excised. If the fragment causes instability of the talonavicular joint or articular step-off of the talar head, or the fracture involves >50% of the talar head, open reduction and rigid internal fixation should be used.

The major late complications include mid-tarsal instability caused by delayed treatment, fracture non-union, and arthrosis of the talonavicular joint. Non-union involving a large portion of the articular surface should be treated with the aim of achieving overall integrity of the joint surface. Severe post-traumatic arthrosis may necessitate a fusion of the talonavicular joint, but this will not restore normal foot function. Anatomical reconstruction with joint preservation leads to considerable functional improvement in painful malunited talar fractures if the joint cartilage is viable and there is no talar collapse or infection.

Because of the good vascularity provided by the anterior tibial vessels, the incidence of osteonecrosis of the talar head is low. When the talar head is malunited but has intact joint cartilage, osteotomy and bone grafting may improve the congruity and movement of the talonavicular joint, especially in young, active patients.

REFERENCES